

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) ~~Method~~ A method for detecting an information signal, a tone and/or of a specified frequency, or a phase change of a tone in one or more signals which contain ~~inter alia this~~ the tone in a signal which contains the information signal or the tone ~~this tone, characterised in that each~~ the method comprising:

dividing the signal is divided into a plurality of blocks corresponding to time segments (blocks), in that only a selection of the signal, wherein the blocks have an adjustable length which is set to ensure accurate detection of the information signal, the tone or the phase change;

selecting a predetermined number of the blocks ~~are further processed to be~~ processed for detection, ~~whereas wherein the blocks which are not selected are not further processed, the signal in the blocks being made available for further processing in the form of sample values of a signal in the time domain, in that the blocks are subjected to transformation, for example transformation;~~

transforming sample values of the signal in selected blocks from the time domain to the frequency domain, to produce at least one output value, and in that a decision in relation to the detection is made with the aid of the; and

detecting the information signal, the tone or the phase change based on said at least one output value ~~of the transformation~~.

2. (Currently Amended) ~~Method~~ The method in particular according to claim 1, ~~characterised in that the~~ wherein said detecting comprises mapping a plurality of output values ~~of the transformation of a plurality of~~ for the selected blocks ~~are mapped by a function or mapping in at least one result, and in that the result is used to produce , and~~ generating a decision value based on a result of said mapping.

3. (Currently Amended) ~~Method~~ The method according to claim 2, ~~characterised in that~~ wherein the mapping comprises a summation ~~which is complex if desired~~ of the output values.

4. (Currently Amended) ~~Method~~ The method according to claim 2, ~~c~~ characterised in that wherein the mapping ~~represents~~ comprises a product formation ~~which is complex if desired~~ of the output values.

5. (Currently Amended) ~~Method~~ The method according to claim 1, ~~characterised in that the transformation~~ transforming is frequency-selective and ~~has been~~ or is adjusted to the frequency of the tone currently to be detected.

6. (Currently Amended) ~~Method~~ The method according to claim 1,
~~characterised in that~~ the transforming comprises applying a Fourier transform is used to
the sample values of the selected blocks.

7. (Currently Amended) ~~Method~~ The method according to claim 1,
~~characterised in that~~ the transforming comprises multiplying the sample values of
selected blocks by a window function and then applying a Fourier transform is used after
multiplication of the time signal by a window to the sample values multiplied by the
window function.

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8. (Currently Amended) ~~Method~~ The method according to claim 6,
~~characterised in that~~ wherein the Fourier transform is computed by using a Goertzel
algorithm, ~~this having been or being~~ which is adjusted to the specified frequency of the
tone to be detected ~~in each case.~~

9. (Currently Amended) ~~Method~~ The method according to claim 1,
~~characterised in that the~~ wherein said detecting step comprises detecting a phase relation
~~is detected~~ at a first moment and a second moment which ~~is delayed by a defined~~
occurring a predetermined time difference (corresponding to a first and a subsequent
block) after the first moment to determine a phase change from complex output values of
the ~~transformation~~ transforming step, in that comparing the a phase difference of between

the phase relations at the ~~two~~ first and second moments ~~is compared with the a~~ phase difference ~~of~~ between the phase relations of the second moment and a third moment which ~~is delayed by occurring the same predetermined time difference in comparison~~ with after the second moment ~~with respect to the second moment, and in that in the event of sufficiently exact coincidence of determining whether a phase change exists based on a result of the comparing of the two phase differences the absence of a phase change in the signal is decided on and in the event of a large deviation in the two phase differences the presence of a phase change in the signal is decided on.~~

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10. (Currently Amended) ~~Method~~ The method according to claim 9, characterised in that the complex number describing the phase is determined with only ~~twelve real multiplications~~ wherein the transforming is performed using complex multiplication.

11. (Currently Amended) ~~Method~~ The method according to claim 9, characterised by its implementation by evaluation of the formula

$$\tilde{y}_v(N-1) \tilde{y}_{v+2}^*(N-1) \tilde{y}_{v+2}^*(N-1) \tilde{y}_{v+4}(N-1) = z$$

where z is a decision variable, and \tilde{y}^* denotes a conjugated complex variable.

12. (Currently Amended) ~~Method~~ The method according to claim 1, characterised in that the block length (= number of sample values of a block) and/or the a

number of blocks used for detection is adjusted as a function of the signal/noise ratio (SNR) of the signal ~~in such a way~~ so that a substantially constant error rate of detection is achieved over a range of signal/noise ratios.

13. (Currently Amended) ~~Method~~ The method according to claim 1, ~~characterised in that~~ wherein a plurality of channels are processed in a ~~type of time-~~ division multiplex with offset blocks.

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14. (Currently Amended) ~~Device~~ A device for detecting an information signal, a tone and/or a phase change of a the tone in one or more signals which contain(s) ~~inter alia this~~ at least one signal which contains the information signal or this the tone, ~~characterised in that the device has means for carrying out the method according to claim 1~~ the device comprising:

a analog-to-digital converter for converting the signal into a plurality of sample values; and

a detector for dividing sample values of the signal into a plurality of blocks corresponding to time segments of the signal, wherein the blocks have an adjustable length which is set to ensure accurate detection of the information signal, the tone or the phase change, selecting a predetermined number of the blocks to be processed for detection, transforming the sample values in selected blocks from the time domain to the frequency domain to produce at least one output value, and detecting the information

signal, the tone or the phase change based on said at least one output value, wherein the blocks which are not selected are not processed.

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15. (Currently Amended) ~~Device~~ The device according to claim 14, ~~characterised by a central processor (34),~~ further comprising a memory device (32) and a control device (30) which during operation supplies data contained in the memory device (32) concerning tones to be detected (~~frequencies~~) to the ~~central processor (34)~~ detector which ~~emits~~ generates an output signal ~~characteristic of the presence of a frequency~~ indicating whether the tone or the phase change has been detected ~~to be detected and/or a phase change.~~